

Implementing Green Infrastructure in Bernardsville

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Rutgers Highlands Stormwater Project Webinar
June 3, 2021



Our Mission

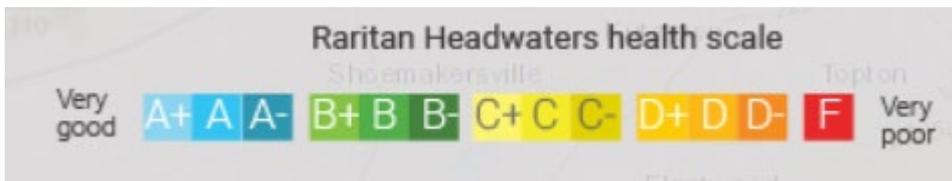
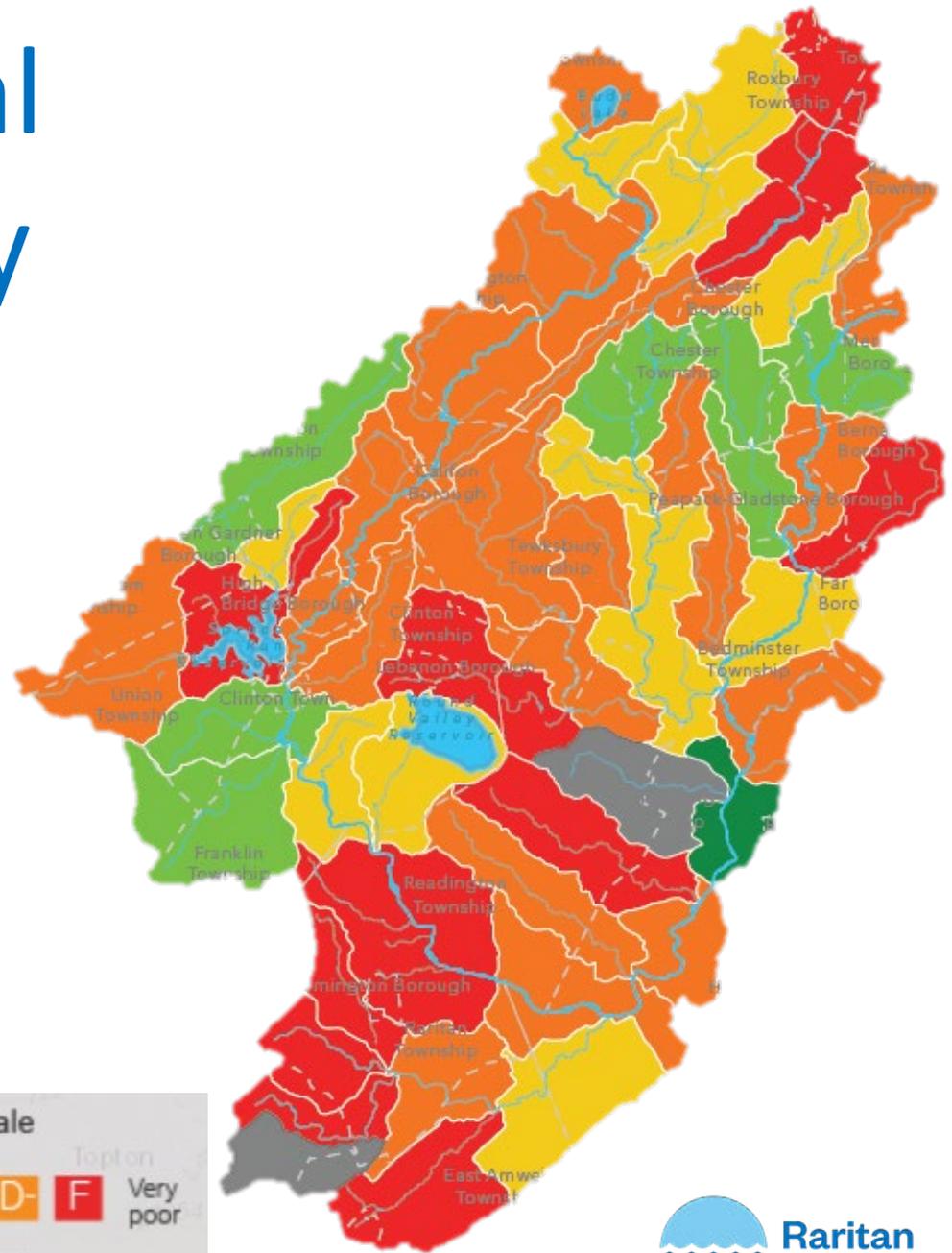
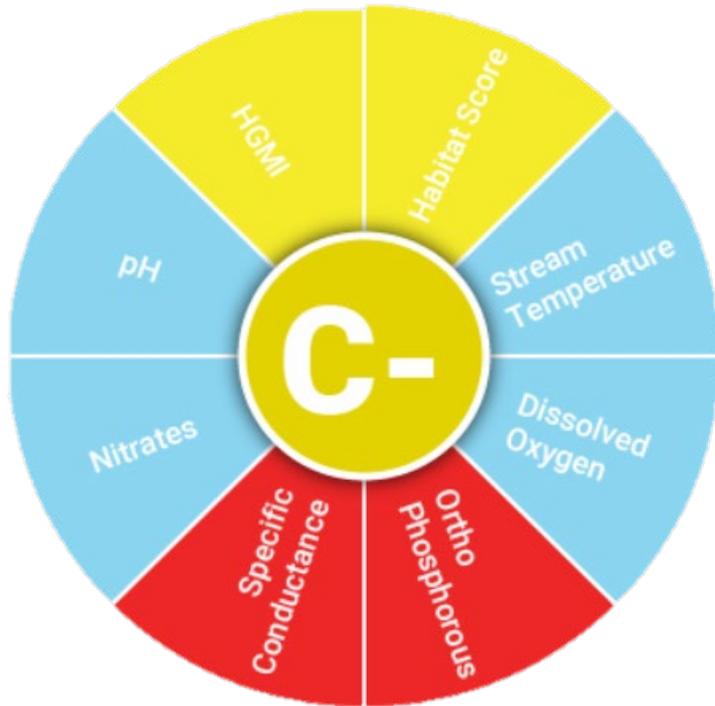
Since 1959, securing clean water for present and future generations. We protect land and water in our watershed and beyond through science, education, preservation and advocacy.



Topics

- 💧 Threats to watershed health in the Upper Raritan
- 💧 Green Infrastructure in Bernardsville
- 💧 Background/Partnerships & People/Funding
- 💧 Project Planning & Implementation
- 💧 Keys to Success
- 💧 Next Steps
- 💧 Take home messages

2020 Regional Water Quality



Major Threats to Water Quality

Stormwater Runoff

- Climate change and extreme weather
- Suburban Development – landscaping
- Increased impervious cover
- Loss of forests and declining forest health
- Lack of stream buffers
- Agriculture – pesticides, fertilizers
- Loss of Biodiversity
- Septic systems
- Road salt
- Plastic Pollution
- Point sources – effluent, landfills







Impacts of Stormwater with Climate Change and Increased Impervious Cover

- Erosion of topsoil
- Scouring of streams:
Damage to streambanks
- Increased sedimentation
- Decreased biodiversity
- Flooding
- Decreased Water Quality
(high bacteria; nutrients;
harmful algal blooms)



First Rain Garden for Bernardsville



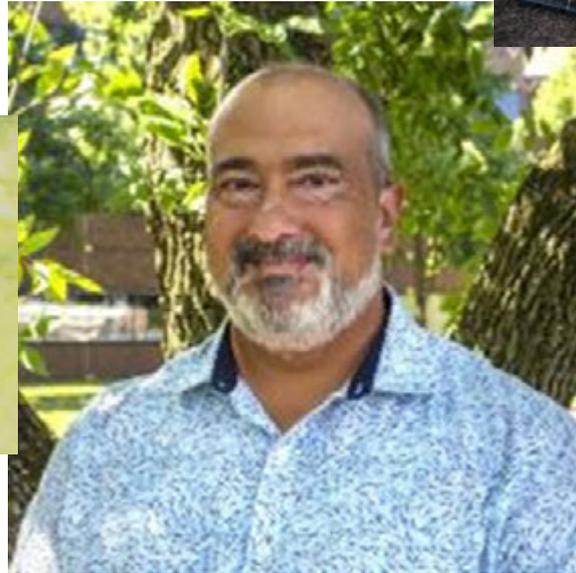
1st RHA Watershed Tools for Local Leaders Seminar: Impervious Cover Assessments and Reduction Action Plans



Borough of Bernardsville



Partners/People



RUTGERS
New Jersey Agricultural
Experiment Station





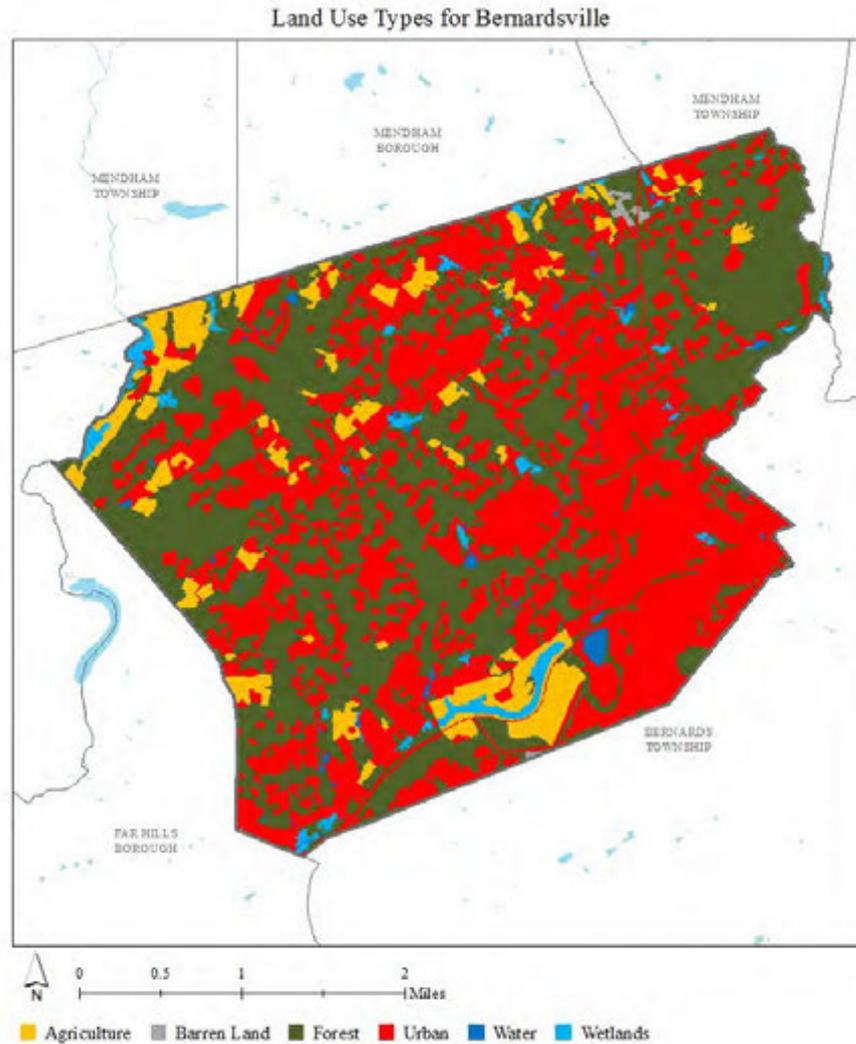


Funding Sources

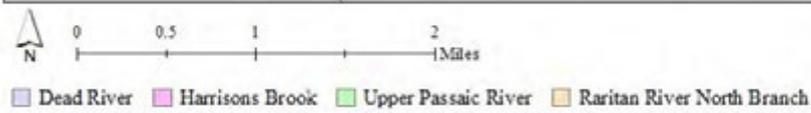
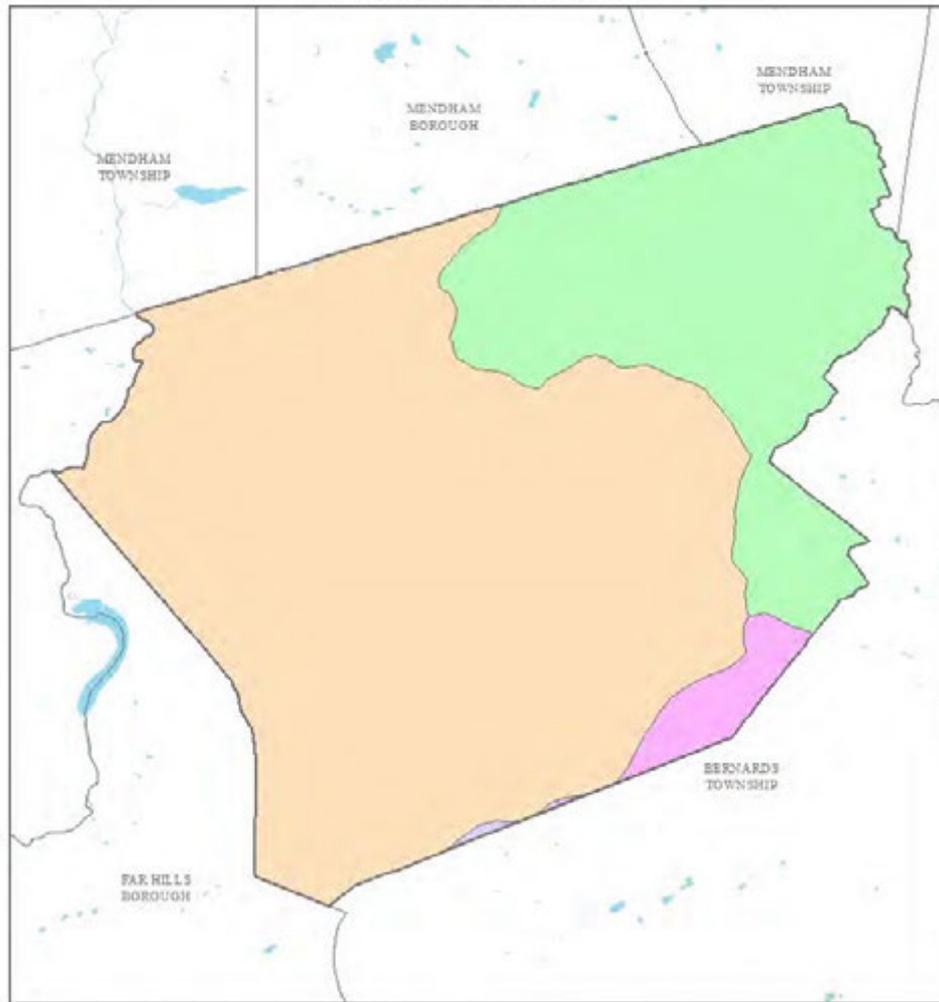
- Planning*
 - Rutgers Water Resources Program
 - Highlands Council
 - Borough of Bernardsville
- Implementation*
 - Borough of Bernardsville
 - Rutgers Water Resources Program
 - ANJEC

*In-kind support from volunteers, DPW, Raritan Headwaters, and Rutgers

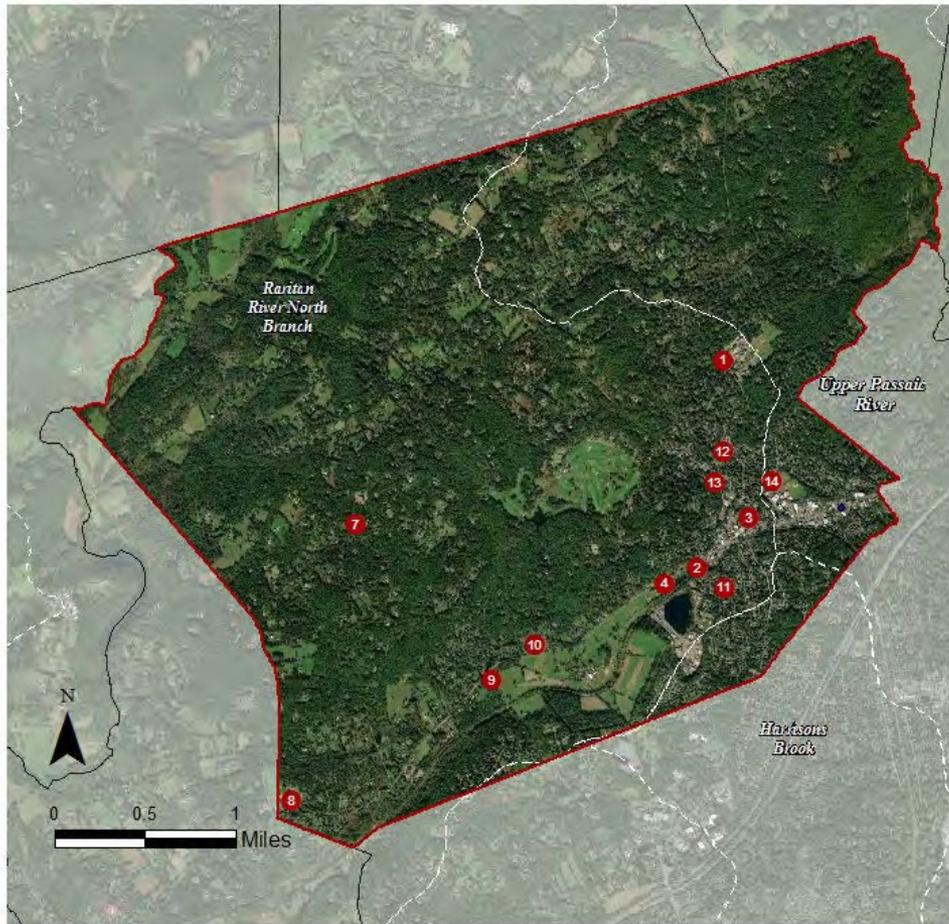
Borough of Bernardsville ICA/RAP



Subwatersheds of Bernardsville



BERNARDSVILLE BOROUGH: GREEN INFRASTRUCTURE SITES



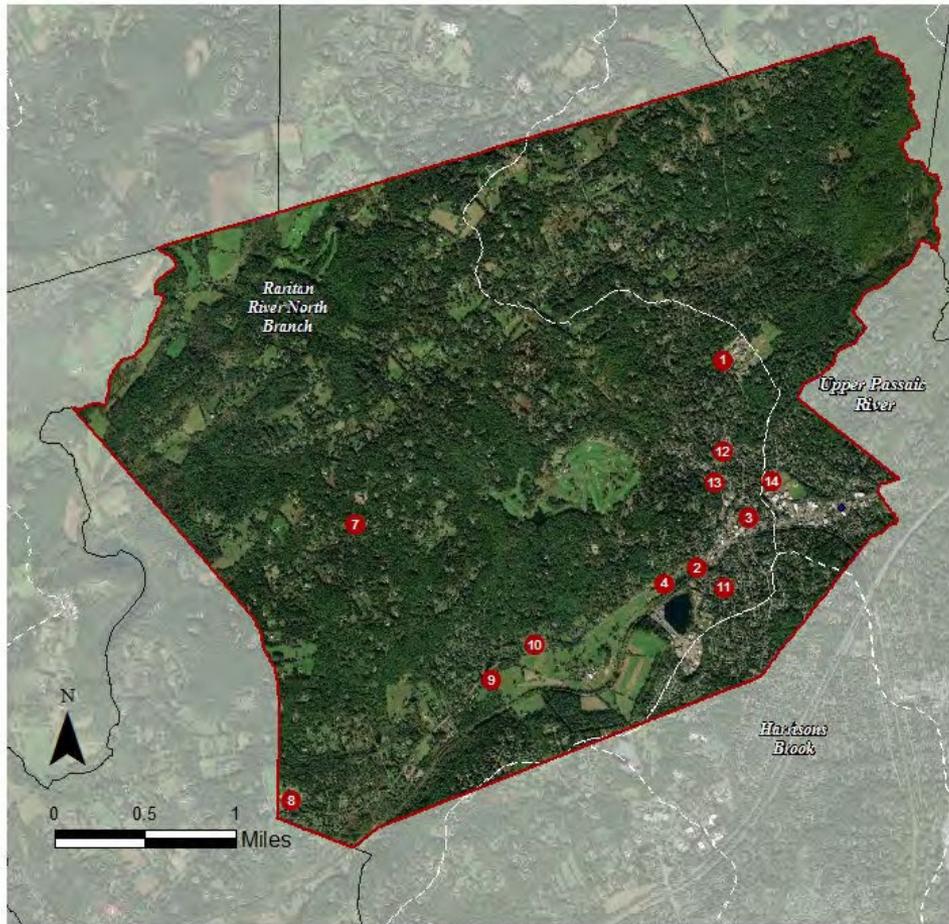
SITES WITHIN THE RARITAN RIVER NORTH BRANCH SUBWATERSHED

1. Bedwell Elementary School
2. Bernardsville Fire Company
3. Bernardsville Library
4. Bernardsville Municipal Court & Nervine Park
5. Bernardsville Municipal Pool
6. Bernardsville School of Music
7. Church of Saint John of the Mountain
8. Far Hills Country Day School
9. First Church of Christ, Scientist
10. Good Shepherd Church
11. Sacred Heart Chapel
12. School of Saint Elizabeth
13. Saint Bernards Church

SITES WITHIN THE UPPER PASSAIC RIVER SUBWATERSHED

14. Bernards High School & Somerset Hills School District

BERNARDSVILLE BOROUGH: GREEN INFRASTRUCTURE SITES



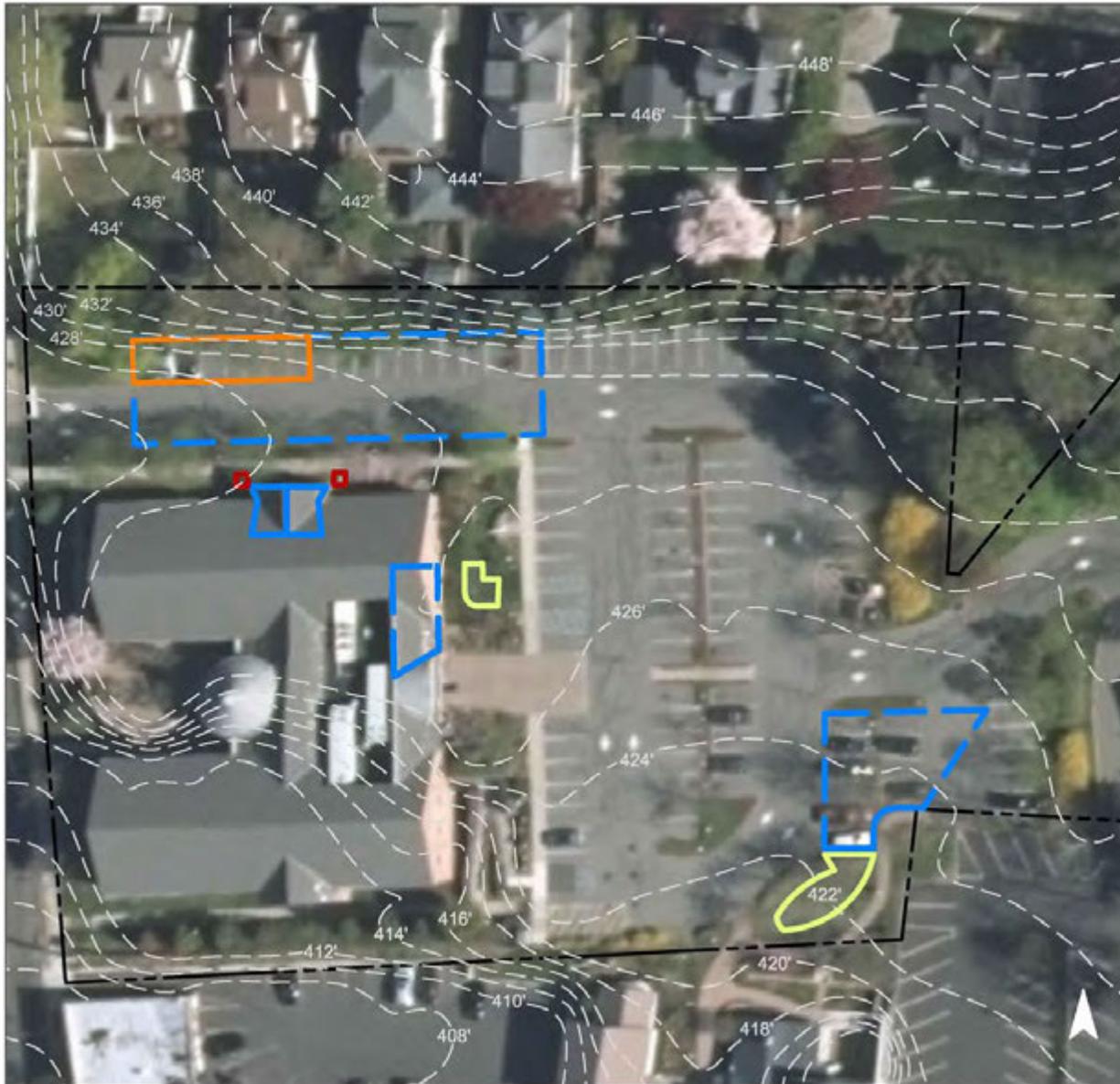
SITES WITHIN THE RARITAN RIVER NORTH BRANCH SUBWATERSHED

1. Bedwell Elementary School
2. Bernardsville Fire Company
- 3. Bernardsville Library x2**
- 4. Bernardsville Municipal Court & Nervine Park x2**
5. Bernardsville Municipal Pool **coming soon**
6. Bernardsville School of Music
7. Church of Saint John of the Mountain
8. Far Hills Country Day School
9. First Church of Christ, Scientist
10. Good Shepherd Church
11. Sacred Heart Chapel
12. School of Saint Elizabeth
13. Saint Bernards Church

SITES WITHIN THE UPPER PASSAIC RIVER SUBWATERSHED

14. Bernards High School & Somerset Hills School District

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bernardsville Library

-  bioretention system
-  pervious pavement
-  planter box
-  drainage area
-  property line
-  2015 Aerial: NJOIT, OGIS











Rain Gardens Beautiful and Beneficial!

Rain Gardens are low maintenance gardens that you can install at home. "Green Infrastructure" captures water runoff from pavement and downspouts before it goes into a stormwater basin and our Mine Brook.

This Rain Garden was designed by Rutgers Cooperative Extension-Water Resources Program and implemented by: Bernardsville Environmental Commission, DPW, and Raritan Headwaters.

Fun Fact #1: Rain Gardens collect runoff water from downspouts, driveways, sidewalks, and lawns so it doesn't go down storm drains.

RUTGERS



Brought to you by the Bernardsville Environmental Commission with Rutgers Cooperative Extension-WRP and Raritan Headwaters
bernardsvilleboro.org/pages/environmental-commission

Rain Gardens help to:

1. Stop flooding by capturing and reducing stormwater runoff.
 2. Purify water before it enters streams and rivers.
 3. Provide food for butterflies, birds, bees and other native species.
 4. Require less water and maintenance as native plants are adapted to local conditions.
 5. Reduce the amount of fertilizers, herbicides and insecticides that enter the watershed.
 6. Help prevent erosion by slowing water down on its way to rivers and streams.
- Fun Fact #3: Rain Gardens filter water through their specially formulated soil, in which microbes naturally break down contaminants and pollutants.

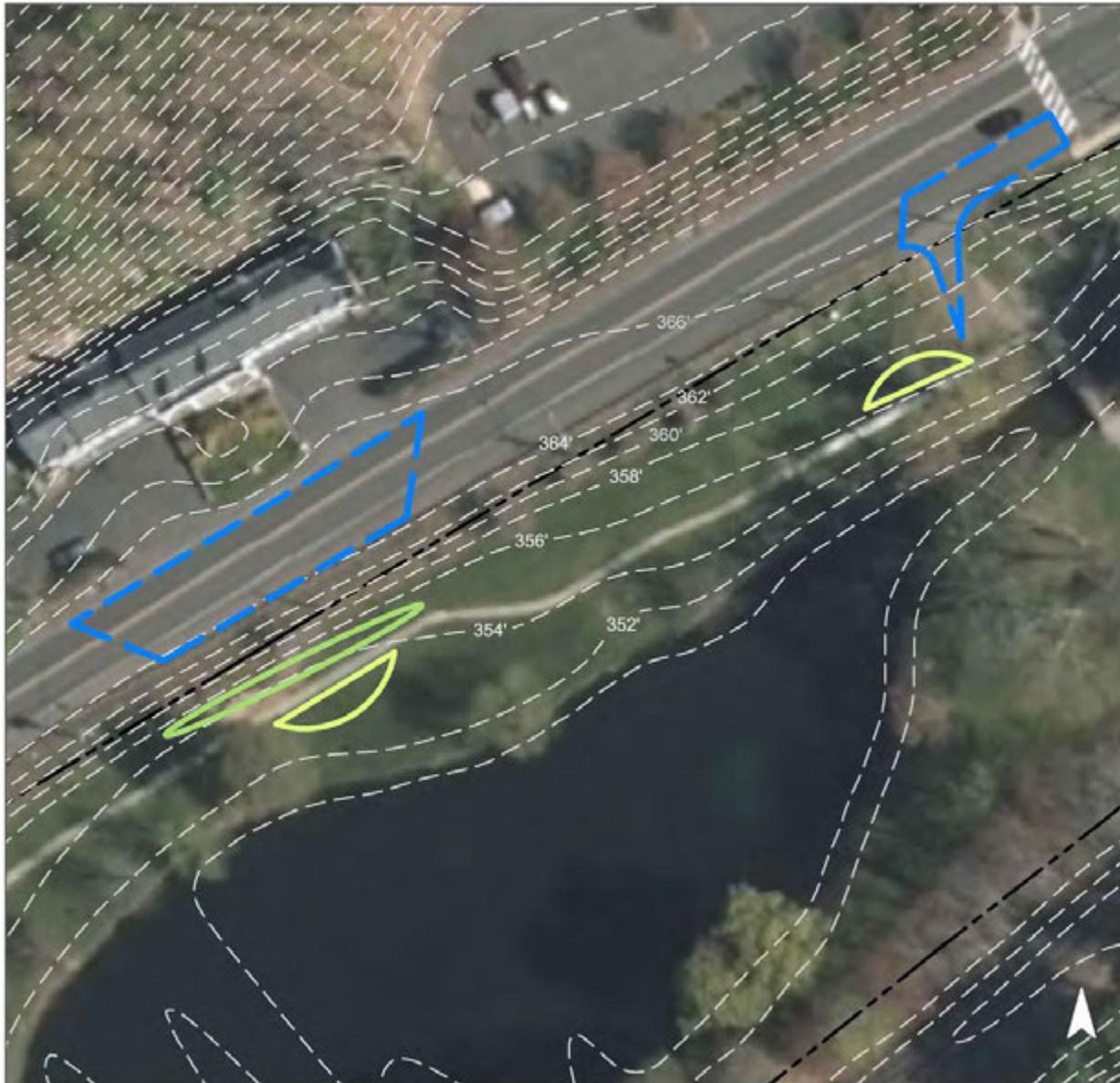
New above ground downspout

Fun Fact #2: Rain Gardens soak up water sending it into the soil and replenishing our underground aquifers.



BERNARDSVILLE

GREEN INFRASTRUCTURE RECOMMENDATIONS



Nervine Park

-  bioretention system
-  bioswale
-  drainage area
-  property line
-  2015 Aerial: NJOIT, OGIS









Rain Gardens Landfill and Bluffs Area

Rain Gardens are low maintenance gardens that help absorb and filter rainwater. They can be installed in a variety of locations, including yards, parking lots, and public areas. Rain Gardens are a great way to reduce runoff and improve water quality.

The Rain Garden was designed by Rutgers Cooperative Extension, Rutgers University, and the Bluffs Area Landfill. It is a great example of how we can use natural resources to improve our environment.

For more information on Rain Gardens, visit www.rutgers.edu/raingardens.

Rutgers University
 Rutgers Cooperative Extension
 Bluffs Area Landfill

- 1. They absorb and filter rainwater before it reaches the ground.
- 2. They reduce runoff and erosion.
- 3. They improve water quality by filtering out pollutants.
- 4. They provide habitat for native plants and animals.
- 5. They are low maintenance and easy to install.
- 6. They are a beautiful addition to any landscape.









Keys to success

- Multiple partners and funding sources
- Build municipal support
- Green Infrastructure Champion
- DPW participation & training
- Volunteer engagement
- 1st demo rain garden in a prominent location
- Outreach – interpretive signs
- Plan ahead – grants, sources of native plants, etc.
- Watering and maintenance a must
- Source materials from local businesses
- Critical to proper function of GI - gutter leaders and road spillways; may need to observe and adapt

Next Steps

- Continue implementing the RAP
- Rain Garden Outreach and Rebate Program
- Climate vulnerability and resilience planning
- Pursue a stronger stormwater ordinance
- Require more green infrastructure
- Educate local decision-makers
- Riparian buffer protection and restoration
- Porous pavement projects

Everyone plays a part in keeping
our watershed healthy and our
water clean

THANK YOU!

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www.raritanheadwaters.org

